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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WALLACE, SCOTT A

ART UNIT PAPER-NUMBER

2671

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/539,872

Applicant(s)

BALAKRISHNAN ET AL.

Examiner

Scott Wallace

Art Unit

2671

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 28-30 is/are allowed.
- 6) ☒ Claim(s) 1-14, 16-17, 22-23, 31-40 is/are rejected.
- 7) ☒ Claim(s) 15, 18-21 and 24-27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

1. The indicated allowability of claims 1-40 are withdrawn in view of the newly discovered reference(s) to Danisch. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-14, 16-17, 22-23, and 31-40 are rejected under 35 U.S.C. 102(e) as being anticipated by Danisch, U.S. Patent No. 6,127,672.

1. As per claim 1, Danisch discloses a flexible handheld tape (ribbon) device (column 4 lines 20-28) comprising a flexible tape (ribbon) having relative position sensing elements spaced along the tape (column 3 lines 49-55), and producing relative tape positions relative to a reference position sensing element of the tape (column 3 lines 45-58); and a curve generation system producing a smooth tape curve using the relative positions as positions of the tape curve (column 3 lines 29-33 and 45-58, abstract, the shape of the surface could be a curve if the substrate is bent).
2. As per claim 2, Danisch discloses wherein tape is dynamically adjustable and curve shape corresponds to the tape shape (Column 3 lines 45-59).
3. As per claim 3, Danisch discloses wherein the curve is part of a surface and a shape of the surface corresponds to the curve shape (column 3 lines 30-33).

4. As per claim 4, Danisch discloses a flexible handheld tape (ribbon) device (column 4 lines 20-28) comprising a flexible tape (ribbon) having relative position sensing elements spaced along the tape (column 3 lines 49-55), and producing relative tape positions relative to a reference position sensing element of the tape (column 3 lines 45-58); and a curve generation system producing a smooth tape curve using the relative positions as positions of the tape curve (column 3 lines 29-33 and 45-58, abstract, the shape of the surface could be a curve if the substrate is bent); wherein a scene (abstract, animation includes scenes) includes an anchor curve (column 3 lines 29-33, shape of surface) and the tape curve drags out a surface shape from the anchor curve responsive to movement of the flexible tape (column 3 lines 29-33, changing the shape of the surface with the flexible substrate).
5. As per claim 5, Danisch discloses wherein the surface is created by interpolation between the anchor curve and the tape curve (column 3 lines 29-33).
6. As per claim 6, Danisch discloses a flexible handheld tape (ribbon) device (column 4 lines 20-28) comprising a flexible tape (ribbon) having relative position sensing elements spaced along the tape (column 3 lines 49-55), and producing relative tape positions relative to a reference position sensing element of the tape (column 3 lines 45-58); and a curve generation system producing a smooth tape curve using the relative positions as positions of the tape curve (column 3 lines 29-33 and 45-58, abstract, the shape of the surface could be a curve if the substrate is bent); wherein the tape curve sets an object profile curve (column 3 lines 29-33, shapes of surfaces of objects).
7. As per claim 7, Danisch discloses wherein the tape curve provides a path to drag out an object shape along the profile curve (column 3 lines 29-33).
8. As per claim 8, Danisch discloses a flexible handheld tape (ribbon) device (column 4 lines 20-28) comprising a flexible tape (ribbon) having relative position sensing elements spaced along the tape (column 3 lines 49-55), and producing relative tape positions relative to a reference position sensing element of the tape (column 3 lines 45-58); and a curve generation system producing a smooth tape curve using the relative positions as positions of the tape curve (column 3 lines 29-33 and 45-58, abstract, the shape of the surface could be a curve if the substrate is bent); wherein the tape curve sets a path curve (column 3 lines 29-33).

9. As per claim 9, Danisch discloses wherein the tape curve specifies a surface shape along the path curve (column 3 lines 29-33).

10. As per claim 10, Danisch discloses a flexible handheld tape (ribbon) device (column 4 lines 20-28) comprising a flexible tape (ribbon) having relative position sensing elements spaced along the tape (column 3 lines 49-55), and producing relative tape positions relative to a reference position sensing element of the tape (column 3 lines 45-58); and a curve generation system producing a smooth tape curve using the relative positions as positions of the tape curve (column 3 lines 29-33 and 45-58, abstract, the shape of the surface could be a curve if the substrate is bent); wherein the flexible curve provides a profile and an object is created by revolving the profile curve in a scene (it is well known to revolve lines and curves about a point to generate objects such as circles or cones).

11. As per claim 11, Danisch discloses a flexible handheld tape (ribbon) device (column 4 lines 20-28) comprising a flexible tape (ribbon) having relative position sensing elements spaced along the tape (column 3 lines 49-55), and producing relative tape positions relative to a reference position sensing element of the tape (column 3 lines 45-58); and a curve generation system producing a smooth tape curve using the relative positions as positions of the tape curve (column 3 lines 29-33 and 45-58, abstract, the shape of the surface could be a curve if the substrate is bent); wherein the tape curve is a spline curve and the relative tape positions are used as control points of the tape curve (spline curves are well known, therefore the shape of the flexible substrate could be shaped into a spline).

12. As per claim 12, Danisch discloses a flexible handheld tape (ribbon) device (column 4 lines 20-28) comprising a flexible tape (ribbon) having relative position sensing elements spaced along the tape (column 3 lines 49-55), and producing relative tape positions relative to a reference position sensing element of the tape (column 3 lines 45-58); and a curve generation system producing a smooth tape curve using the relative positions as positions of the tape curve (column 3 lines 29-33 and 45-58, abstract, the shape of the surface could be a curve if the substrate is bent); a world position sensor attached to the flexible tape and providing a three dimensional world position of the tape (column 3 lines 29-33, the substrate is used to find the position of an object in space, therefore there must be a sensor for this) and said curve generation system positions the tape curve in a virtual scene in correspondence to

the world position (abstract, since this is used in animation, animation is well known in virtual environments).

13. As per claim 13, Danisch discloses wherein said world position sensor senses three dimensional world orientation of said world sensor and said curve generation system positions the tape curve in a virtual scene in correspondence to the world orientation (abstract, since this is used in animation, animation is well known in virtual environments).

14. As per claim 14, Danisch discloses a flexible handheld tape (ribbon) device (column 4 lines 20-28) comprising a flexible tape (ribbon) having relative position sensing elements spaced along the tape (column 3 lines 49-55), and producing relative tape positions relative to a reference position sensing element of the tape (column 3 lines 45-58); and a curve generation system producing a smooth tape curve using the relative positions as positions of the tape curve (column 3 lines 29-33 and 45-58, abstract, the shape of the surface could be a curve if the substrate is bent); a command input device producing an input command and said curve generation system controls the tape curve responsive to the input command (column 6 lines 53-60, the users body movements acts as the input commands).

15. As per claim 16, Danisch discloses a flexible handheld tape (ribbon) device comprising a flexible tape (ribbon) having position sensing elements spaced along the tape and producing relative tape (ribbon) positions to a reference position sensing element of the tape (column 3 lines 45-60 and column 4 lines 20-35); and an animation system using the relative positions as a command (abstract).

16. As per claim 17, Danisch discloses wherein a shape of the input device flexible tape indicates a command (column 6 lines 53-60).

17. As per claim 22, Danisch discloses a flexible handheld device comprising a flexible tape (ribbon) having relative position sensing elements spaced along the tape (ribbon) and producing relative tape positions relative to a reference position sensing element of the tape (column 3 lines 45-60 and column 4 lines 20-35); and editing system editing one of curves and surfaces responsive to the relative position (column 3 lines 29-33, changing the shape is editing).

18. As per claim 23, Danisch discloses wherein a virtual scene includes a scene curve and said curve generation system edits the scene curve responsive to the tape curve (abstract and column 3 lines 45-60, animation is well known to be used in virtual environments).

19. As per claim 31, Danisch discloses a flexible handheld device comprising a flexible tape (ribbon) having relative position sensing elements spaced along the tape (ribbon) and producing relative tape positions relative to a reference position sensing element of the tape (column 3 lines 45-60 and column 4 lines 20-35); a curve generation system producing a smooth tape curve using the relative positions as positions of the tape curve (column 3 lines 29-33), and wherein the tape curve dynamically controls curves in a dynamic scene responsive to the flexible tape (column 3 lines 45-60).

20. As per claim 32, Danisch discloses a flexible handheld device comprising a flexible tape (ribbon) having relative position sensing elements spaced along the tape (ribbon) and producing relative tape positions relative to a reference position sensing element of the tape (column 3 lines 45-60 and column 4 lines 20-35); a curve generation system producing a smooth tape curve using the relative positions as positions of the tape curve (column 3 lines 29-33), and wherein the flexible tape is conformed to a shape of a physical object and the tape curve comprises an input of the shape (column 3 lines 29-33).

21. As per claim 33, Danisch discloses a flexible handheld device comprising a flexible tape (ribbon) having relative position sensing elements spaced along the tape (ribbon) and producing relative tape positions relative to a reference position sensing element of the tape (column 3 lines 45-60 and column 4 lines 20-35); a curve generation system producing a smooth tape curve using the relative positions as positions of the tape curve (column 3 lines 29-33), and wherein said device includes subsection specification sensors and said tape curve shape is responsive to subsection shape (column 3 lines 45-60).

22. As per claim 34, Danisch discloses a flexible handheld device comprising a flexible tape (ribbon) having relative position sensing elements spaced along the tape (ribbon) and producing relative tape positions relative to a reference position sensing element of the tape (column 3 lines 45-60 and column 4 lines 20-35); a curve generation system producing a smooth tape curve using the relative positions as positions of the tape curve (column 3 lines 29-33); a two-dimensional surface upon which said device

rests and upon which surface a shape of said device is changed (the tape can be placed on any surface like a table); and a world position input device specifying a world position of the tape curve (column 3 lines 29-33).

23. As per claim 35, a flexible handheld tape (ribbon) device comprising a dynamically shape adjustable flexible tape (ribbon) having relative position sensing elements spaced along the tape (ribbon) and producing relative tape (ribbon) positions relative to a reference position sensing element of the tape (column 3 lines 45-60); a curve generation (column 3 lines 29-33, surfaces can be curved) and editing system (column 3 lines 29-33, changing the shape is editing) producing a smooth spline (spline curves are well known) tape curve using the relative positions as positions of the tape curve corresponding to the dynamically adjusted shape (column 3 lines 29-33 and 45-60) and producing a shape of a surface when the tape curve drags out a surface shape from an anchor curve responsive to movement of the flexible tape (column 3 lines 29-33, changing the shape of the surface with the flexible substrate); a world position sensor attached to the flexible tape and providing a three dimensional world position and orientation of the tape (column 3 lines 29-33) and said curve generation system positioning the tape curve in a virtual scene (abstract, animation is well known in virtual environments) in correspondence to the world position and orientation (abstract); and with said tape device acting as command input (column 6 lines 53-60, user acts as input) device producing an input command and said curve generation system controlling and editing the tape curve responsive to the input command and a shape of the tape curve (column 3 lines 29-33 and column 6 lines 53-60).

24. As per claim 36, Danisch discloses a flexible tape device producing shape, twist and six degrees of freedom position information (abstract); and display means displaying a virtual curve having a shape (column 3 lines 45-60), a twist and position corresponding to the shape, twist and six degrees of freedom position information (abstract).

25. As per claim 37, Danisch discloses adjusting a shape of a flexible tape (ribbon, column 3 lines 45-60 and column 4 lines 20-35); and producing a virtual curve using the flexible tape (ribbon) as control points of a non-uniform rational B-spline curve (B-spline curve is well known to be used).

26. As per claim 38, Danisch discloses a computer readable storage controlling a computer (column 10 lines 47-54) and comprising a process of inputting a shape of a flexible tape (ribbon, column 3 lines 45-60) and controlling a non-uniformed B-spline curve responsive to the shape (B-spline curves were well known curves).

27. As per claim 39, Danisch discloses a graphical user interface (column 3 lines 29-33) comprising a virtual non-uniformed rational B-spline tape (ribbon, B-spline were well known curves) curve manipulable in a scene responsive to a physical flexible tape (column 3 lines 45-60).

28. As per claim 40, Danisch discloses adjusting a shape of a flexible tape with two hands (column 3 lines 45-60); and producing a virtual (abstract, animation is well known to be in virtual environments) curve using the flexible tape (column 3 lines 45-60).

Allowable Subject Matter

29. Claims 15, 18-21, 24-27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

30. Claims 28,29 and 30 are allowed.

31. The following is a statement of reasons for the indication of allowable subject matter: Prior art of reference fails to disclose a user controllable gain on a tape with sensors, wherein tape is displayed egocentrically to the user in a scene in which the tape curve is interacting within changes in viewpoint, wherein the flexible tape comprises a physical constraint comprising one of a substitutable mechanical stiffness member, a physical lock and a shape retaining member.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Scott Wallace** whose telephone number is **703-605-5163**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Mark Zimmerman**, can be reached at 703-305-9798.

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Any response to this action should be mailed to:

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or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA,
Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be
directed to the Technology Center 2600 Customer Service Office whose telephone number is
(703) 306-0377.

A handwritten signature in black ink, appearing to read "Mark Zimmerman", with a long horizontal flourish extending to the right.

MARK ZIMMERMAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600